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WHITTEN LOCK CULVERT REPAIR – AUG 2001

(PREPLACED-AGGREGATE CONCRETE)

JAMIE WHITTEN
LOCK AND DAM

JAMIE WHITTEN LOCK & DAM

(Originally: Bay Springs Lock & Dam)

- Lock Chamber: 600 feet by 110 feet / 84-foot lift
- Culvert Filling/Emptying System: Bottom Longitudinal Floor Culvert System (Commonly referred to as **“H”** or **“Tuning Fork”** system)
- System consists of 10-port intake manifolds on either lock wall from which the flow transitions to 14’ X 14’ culverts

Continued

- Reverse-tainter valves control filling and emptying flows
- Dual 12-inch diameter ducts are provided to introduce air downstream of each filling/emptying valve
- Crossover culvert vertically splits the flow for each half of the chamber with a horizontal splitter plate in each main culvert
- Flow then splits horizontally to feed the two 10-port manifolds in each half of the chamber

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CONCRETE EROSION IN CULVERT FILLING/EMPTYING SYSTEM

- Location: Roof of culvert at linear monolith joint between lock wall and crossover (lock floor)

- Description: Eroded area was on the ceiling above horizontal splitter and extended the full width (20 feet at monolith joint) of the culvert and approximately 13 feet inward along the centerline. Depth of concrete erosion varied from 18 inches to 2 inches and the waterstop associated with subject monolith joint was either missing or damaged beyond repair. Reinforcing steel (#11 and #7) was missing or exposed.

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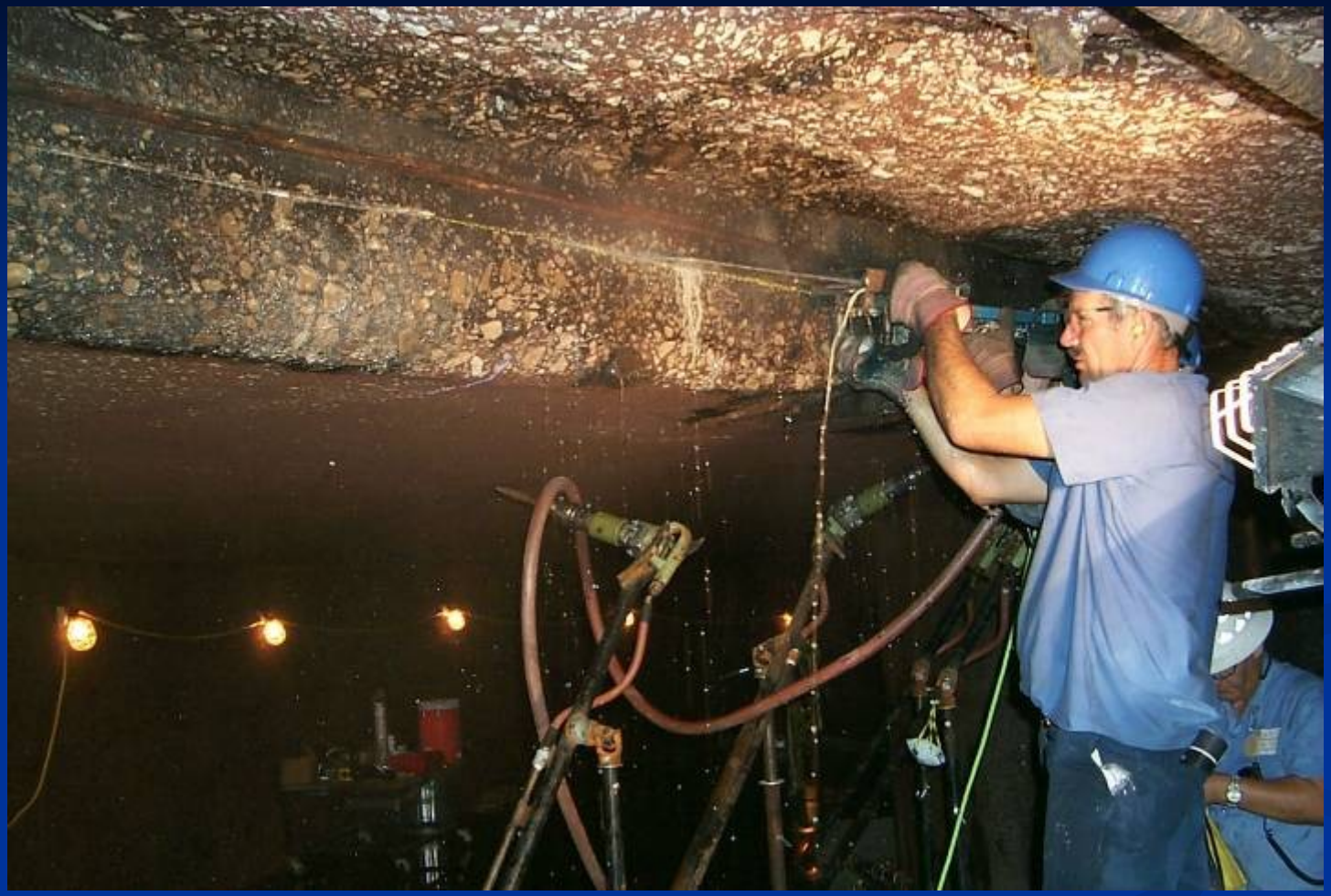

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REPAIR PROCEDURE

- Prepare eroded area for placement of aggregate containment mesh – sawcut and contour
- Replace damaged waterstop
- Replace missing/damaged reinforcing steel
- Anchor welded-steel mesh in area of erosion to provide containment for preplaced-aggregate
- Load preplaced-aggregate into containment
- Erect plywood forms
- Pump high-strength/non-shrink grout (*MasterFlow 928*) to fill voids within

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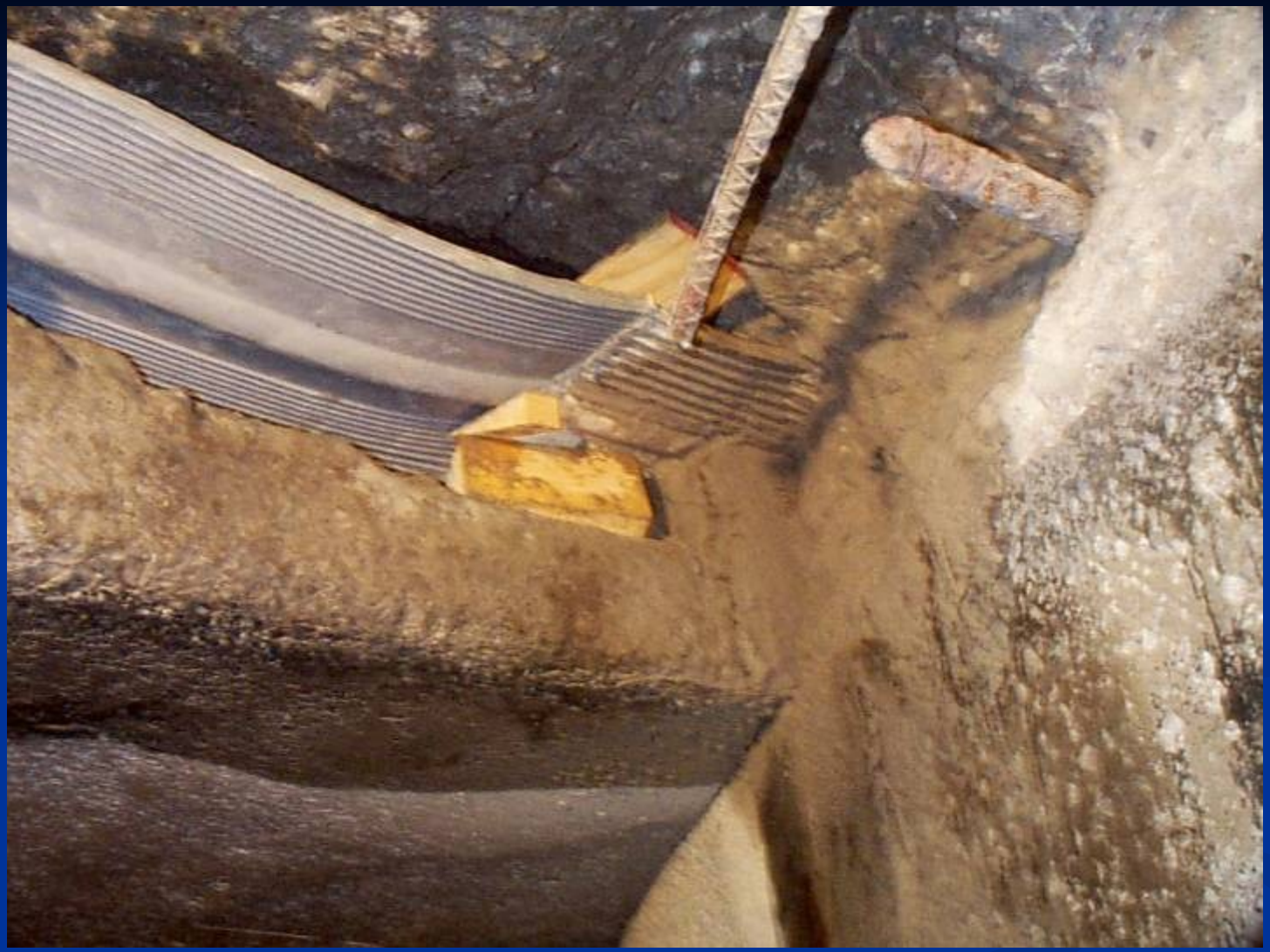

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PERIODIC UNDERWATER INSPECTIONS

- Method: Underwater “ROV”
- Frequency: Every 3 to 6 months
- Data Collected: Digital video with sound (DVD)
- Current Status of Repair: Most recent inspection in February 2006 revealed only minor deterioration

UNDERWATER “ROV”

- Model: VideoRay Pro III (VideoRay LLC - Exton, PA)
- Depth Rating: 500 feet
- Speed: 2.5 knots, upgradeable to 4.0 knots
- Video Recording: Digital
- Accessories: Digital scanning sonar (Tritech), depth / compass readouts, mini-gripper
- Other available accessories: Positioning devices, metal and paint thickness measuring instruments, laser measuring

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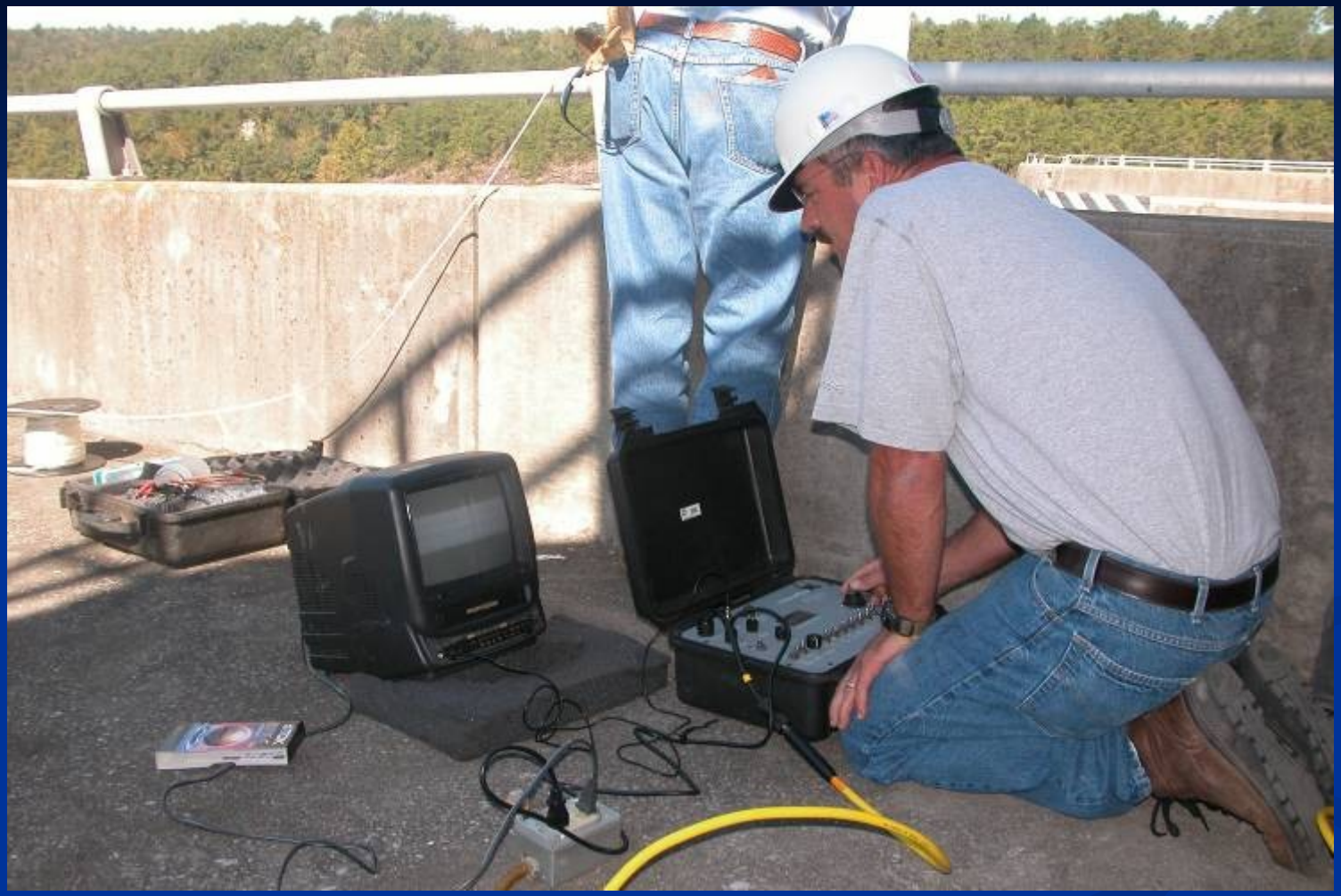

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